Amendments to the Claims

The following listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A device for detecting a selected analyte using bioluminescence, comprising:

a stably transformed bacterium containing a construct integrated into the bacterial cell genome, said construct comprising a promoterless *lux* gene cassette and a *mer* regulatory element responsive to an analyte comprising mercury;

a support matrix comprising a filter strip onto which the bacterium is attached; and

an encapsulating material to contain said bacterium attached to said filter strip, wherein the encapsulated bacterium emits visibly detectable light in the presence of said analyte comprising mercury.

Claim 2 (previously presented): The device of claim 1, wherein the construct comprises *mer Ro/p-lux.*

Claim 3 (previously presented): The device of claim 1, wherein the construct comprises *merRo/pA-lux.*

Claim 4 (canceled)

Claim 5 (previously presented): The device of claim 1, wherein the analyte comprises mercury II ion.

Claims 6-7 (canceled)

Claim 8 (previously presented): The device of claim 1, wherein the bacterium is selected from the group consisting of *Pseudomonas fluorescens*, *P. putida* 2440, *P. putida* F1, *Escherichia coli*, *Vibrio fischerii*, *Vibrio harveyi*, and *Bacillus subtilis.*

Claim 9 (previously presented): The device of claim 8, wherein the *P. fluorescens* is *P. fluorescens* 5R.

Claim 10 (original): An apparatus comprising the device of claim 1.

Claim 11 (previously presented): The apparatus of claim 10, further comprising a holder for the support matrix onto which the bacterium is immobilized.

Claim 12 (original) The apparatus of claim 11 adapted to hand-carrying.

Claims 13-15 (canceled)

Claim 16 (currently amended): ~~The encapsulated genetically modified bacterium of claim 13,~~ A genetically modified bacterium responsive to mercury, said bacterium encapsulated in an encapsulating material and containing a construct integrated into the bacterial cell genome, said construct comprising a promoterless *lux* gene cassette and a *mer* regulatory element, wherein said bacterium produces a bioluminescent protein in the presence of mercury, said

bacterium further comprising a support matrix comprising a filter strip onto which said bacterium is attached.

Claim 17 (canceled)

Claim 18 (previously presented): The bacterium of claim 16, wherein the filter strip comprises cellulose.

Claim 19 (previously presented): A portable kit for detecting mercury comprising the device of claim 2 or 3 and instructions for use in detecting mercury.

Claims 20-22 (canceled)

Claim 23 (previously presented): The kit of claim 19, wherein said genetically modified bacterium is selected from the group consisting of *P. putida* 2440, *P. fluorescens* 5R, *P. putida* F1, *Escherichia coli*, *Vibrio fischerii*, *Vibrio harveyi*, and *Bacillus subtilis*.

Claim 24 (canceled)

Claim 25 (currently amended): A method for direct visual detection of mercury in water samples comprising:

providing at least one stably transformed bioreporter bacterium genetically modified to contain a construct integrated into the bacterial cell genome, wherein said ~~at least one~~ construct comprises a promoterless *lux* gene cassette and a *mer* regulatory element, said stably transformed bioreporter bacterium being attached to a support matrix comprising a filter strip and disposed within protective packaging for preserving hydration of said bacterium;

removing said protective packaging;

contacting a water-comprising sample suspected of containing mercury with said bioreporter bacterium; and

detecting the presence of the mercury when a visibly detectable luminescence is produced.

Claim 26 (canceled)

Claim 27 (previously presented): The method of claim 25, wherein said visibly detectable luminescence is detected with a naked eye, night vision equipment or within a light-tight slide holder.

Claim 28 (canceled)

Claim 29 (new): A device enclosed in a water-tight packaging, the device comprising:

(a) encapsulated bacteria capable of producing a detectable signal in response to an analyte; and

(b) a filter strip in fluid communication with the encapsulated bacteria.

Claim 30 (new): The device of claim 29, wherein the filter strip is impregnated with a dry nutrient source capable of supporting metabolism in the encapsulated bacteria.

Claim 31 (new): The device of claim 29, wherein the filter strip is dry.

Claim 32 (new): The device of claim 29, wherein the detectable signal is light.

Claim 33 (new): The device of claim 30, wherein the filter strip is dry and the detectable signal is light.

Claim 34 (new): A device enclosed in a water-tight packaging, the device comprising:

(a) encapsulated bacteria capable of producing a detectable signal in response to an analyte;

(b) a filter strip; and

(c) a water impermeable barrier in a position that separates the encapsulated bacteria from the filter strip, the water impermeable barrier being removable from the position that separates the encapsulated bacteria from the filter strip, wherein removal of the water impermeable barrier from the position that separates the encapsulated bacteria from the filter strip places the filter strip in fluid communication with the encapsulated bacteria.

Claim 35 (new): The device of claim 34, wherein the filter strip is impregnated with a dry nutrient source capable of supporting metabolism in the encapsulated bacteria.

Claim 36 (new): The device of claim 34, wherein the filter strip is dry.

Claim 37 (new): The device of claim 34, wherein the detectable signal is light.

Claim 38 (new): The device of claim 35, wherein the filter strip is dry and the detectable signal is light.

Claim 39 (new): A method of detecting the presence of an analyte in a liquid sample, the method comprising the steps of:

(a) providing a device enclosed in a water-tight packaging, the device comprising encapsulated bacteria capable of producing a detectable signal in response to the analyte and a filter strip in fluid communication with the encapsulated bacteria;

(b) removing the device from the water-tight packaging; and

(c) contacting the filter strip with the liquid sample whereby the liquid sample flows through the filter strip to the bacteria; and

(d) placing the device under suitable conditions that would allow the bacteria to produce the detectable signal if the analyte were present in the liquid sample,

wherein presence of the analyte in the liquid sample causes the bacteria to produce the detectable signal.

Claim 40 (new): The method of claim 39, wherein the liquid sample is a water sample.

Claim 41 (new): The method of claim 39, wherein the detectable signal is light.

Claim 42 (new): The method of claim 39, wherein the filter strip is impregnated with a dry nutrient source capable of supporting metabolism in the encapsulated bacteria, and the step

of contacting the filter strip with the liquid sample dissolves at least a portion of the nutrient source causing the dissolved nutrient source to flow to the bacteria.

Claim 43 (new): The method of claim 42, wherein the detectable signal is light.

Claim 44 (new): A method of detecting the presence of an analyte in a liquid sample, the method comprising the steps of:

(a) providing a device enclosed in a water-tight packaging, the device comprising encapsulated bacteria capable of producing a detectable signal in response to an analyte, a filter strip, and a water impermeable barrier in a position that separates the encapsulated bacteria from the filter strip, the water impermeable barrier being removable from the position that separates the encapsulated bacteria from the filter strip, wherein removal of the water impermeable barrier from the position that separates the encapsulated bacteria from the filter strip places the filter strip in fluid communication with the encapsulated bacteria;

(b) removing the device from the water-tight packaging;

(c) removing the water impermeable barrier from the position that separates the encapsulated bacteria from the filter strip;

(d) contacting the filter strip with the liquid sample whereby the liquid sample flows through the filter strip to the bacteria; and

(e) placing the device under suitable conditions that would allow the bacteria to produce the detectable signal if the analyte were present in the liquid sample,

wherein presence of the analyte in the liquid sample causes the bacteria to produce the detectable signal.

Claim 45 (new): The method of claim 44, wherein the liquid sample is a water sample.

Claim 46 (new): The method of claim 44, wherein the detectable signal is light.

Claim 47 (new): The method of claim 44, wherein the filter strip is impregnated with a dry nutrient source capable of supporting metabolism in the encapsulated bacteria, and the step of contacting the filter strip with the liquid sample dissolves at least a portion of the nutrient source causing the dissolved nutrient source to flow to the bacteria.

Claim 48 (new): The method of claim 47, wherein the detectable signal is light.